spire of Salisbury Cathedral, to which the reader had likened that of St. Pierre in Caen, that the former was still in an excellent state of preservation. It was constructed of the Chilmark stone, which was quarried in the same way as the Caen stone, being excavated from under an overlying strong bed of stone.

Mr. C. H. Smith remarked that Caen stone and the Chilmark stone were wholly different. The latter he considered one of the most durable stones in England, equal to the Anstone stone. It was a question, at one time, whether it should be used for the new Houses of Parliament instead of Anstone, but the expense of carriage prevented it. As to Caen stone, he had very little to say: there were many qualities of it, as Mr. Donaldson had pointed out. Some of it was very durable, and some of it was by no means so.

The Dean of Westminster said he had unfortunately missed hearing the greater part of the paper, and must therefore confine his observations to what had been stated afterwards. Great thanks were due to the government who had appointed the commission to inquire as to the best building stones for the new Houses of Parliament. The result was of the greatest value, and might be safely appealed to where information was wanted. The Chilmark stone was of the same age, geologically speaking, as Portland stone; neither of them in his opinion possessed such durability as Anstone stone. Some Anstone stone was not good, as for example that used in some parts of York Cathedral, and which had been lately replaced; but the right sort was uniformly crystalline (not crystallized),—completely saccharine, like white sugar or Parian marble. To the close contact of the crystalline faces, Parian marble and Anstone stone, in rather a less degree, owed their durability, and their power of resisting frost, which, where no water is present, has, in fact, no power. He would prophecy that the stone of the Houses of Parliament would be as perfect 600 years hence as now.

The Dean then described the operation of quarrying, and said in some cases the easiest way was to dig a quarry and throw the superincumbent rubbish right and left. These old quarries had much deceived some antiquaries, and had been called "British Villages," defence against cavalry, &c.: they were in truth nothing more than the result of the operation he had described. Allusion had been made to the Beer stone. This was not allied to Caen stone: it was a silicate of lime, or chalk, in fact. The Church of St. Ouen, shewed how well chalk would last: the arrises there were as sharp as ever. As to the Caen stone in Westminster Abbey, some of it had decayed to the extent of three or four inches in depth. It was very various in quality, and it would be difficult now to get stone from the beds from which the early buildings in Caen were erected. He should consider the fine grained Caen stone now used, would have a duration of 300 years. In the Bath stone, as in all others, there was also great difference. The reverend speaker then gave an account at considerable length of the Portland formation, which presents the curious feature of an ancient forest at a short distance from the surface. Purbeck marble, which belongs to this formation, was universally employed for monuments for several centuries from the time of William Rufus. The clay in it absorbs moisture, and it decays in consequence. He would repeat, that he had great confidence, both on mechanical and chemical grounds, in Anstone stone as the best in England; and as long as he had controul at Westminster Abbey, he would allow no other to be used externally.

Mr. Godwin said, if additional evidence were needed of the different qualities to be found in Caen stone, the comparatively modern dwelling-houses in that town as compared with some of the ancient churches there, where a better stone had been used, would afford it. Many of the former were honeycombed over their whole surface, while the latter were sound, and shewed outlines as sharp as when first erected. This, with what had been said before on that evening, would suffice to show that it was necessary to do something more than direct in their specifications that "Caen stone" should be used; it should be the best description of Caen stone, and it was very desirable that the means of detecting the differences should be discovered. He hoped that, on the foundation of information which Mr. Donaldson had laid down, others would build, so that Caen stone might be used somewhat less in the dark than is now the case. Several years had passed since he was in Caen, but he would add his recommendation to what had been said before in favour of a visit by all who were studying architectural antiquities, not merely to Caen, but to all the principal places in Normandy, which would be found full of instruction and interest, as for example St. Lo, Coutances, Bayeux, Limoges, &c. The cathedral of Coutances had been considered by French antiquaries to afford proof, founded on documentary evidence, of the use of the pointed arch in France at a much earlier period than was usually ascribed to it. Mr. Gally Knight, however, and other English antiquaries, first reasoning from the building itself, and then sifting the supposed documentary evidence in favour of its early date, had conclusively destroyed this assumption, which had otherwise unsettled our architectural chronology. The interior of Bayeux Cathedral would be found very interesting. The good position of many of the churches would be observed, and the skill with which the medieval architects turned accidents to advantage. At Graville, for example, near Havre, where the church, an early structure, was built on a hill, the face of the rock, he remembered, was formed into a flight of fifty or sixty steps, and had a striking effect. In the details of the early architecture of Normandy, and of what we know as Norman architecture in England, they would find some differences; for example, he had never seen in Normandy such elaborately ornamented doorways as we find in the west front of Rochester Cathedral and elsewhere.

The Chairman then alluded feelingly to the death of a member, Mr. Charles Dyer, an architect of considerable ability, of whom mention will be found on another page, and adjourned the meeting.

ON CAEN, ITS QUARRIES AND BUILDINGS.

BEING about to employ a large quantity of Caen stone, in a work which is on the point of commencing, I was anxious to make myself fully acquainted with its properties and varieties, and the quantity of well-seasoned blocks that might be available in the market. I therefore determined to go to Caen itself, and visit the quarries. A few hours carries one over to Havre from Southampton, and a steamboat conveys passengers and goods from Havre to Caen in four hours. The last hour and a half is occupied in mounting the river Orne, which, in its course from the sea to some distance above Caen, has a flat country on the left bank of the river, but, on the right, generally a lofty bank, at times immediately overhanging the stream, at others receding from it, but again joining it. Not far from the mouth of the Orne, at a place called Ranville, quarries are worked in the face of this bank. It is a harder and coarser variety of the same stone as that near Caen, and of more open texture, with a more crystaline character, hence more adapted for hydraulic works than for buildings. I am informed by our friend, Mr. C. H. Smith, that these coarse varieties, which doubtless are very durable, resemble, in several particulars, the stone from Weldon, in Northamptonshire, of which the oldest buildings at Cambridge are constructed. The approach to Caen, as we mounted the river, was very striking when the first view is caught of the city. To the right, on a bold eminence, is a large church, dedicated to the Holy Trinity, of Norman architecture, with fine towers, and containing in its crypt the tomb of the pious and charitable Queen Matilda. To it is attached an imposing building, once the Abbaye aux Dames, and appropriated as an hospital ever since 1823. The lofty spires of S. Sauveur and S. Pierre, in the middle of the town, shoot up with graceful elegance out of the mass of houses; and the overhanging towers of S. Jean rise majestically, although considerably out of the perpendicular, while the spires and mass of the venerable S. Etienne close the further distance, the intermediate space being filled with a variety of large buildings, both public and private. There are noble quays to the right and left, where the river skirts the town; and they are now forming an ample and noble basin for the increasing commerce of this important city. On the quays, to the left, are the stone wharfs occupied by the blocks belonging to the principal stone-merchants, Messrs. Foucard, Luard, and Jobert, taken in the order of their position. On the opposite side of the river is a noble broad quay, where the vessels, in general, receive and discharge their cargoes.

The material generally known to us under the appellation of Caen stone is of the oolitic formation, presenting a close analogy in its general, and even in some of its minor divisions, with the rocks of similar kind in the south of England. The quarries whence it is derived are situated at Allemagne, a parish and village on the right bank of the river, at the distance of about a mile and a half, or two miles, above the city. The quarries heretofore worked occupy a superficial area of about 4 square miles. Some are worked by means of shafts, which afford access to the quarries under ground, branching off on all sides in long galleries, or multiplied by chambers, which are about 18 feet wide, and the ceiling-bed upheld by massive rude piers, which are left 9 feet square and 18 feet apart, the height being about 15 or 20 feet. These quarries, which are immediately on the bank of the river—here abruptly rising from the water—have an access from the side of the bank, and are approached by inclined roads, leading from the summit of the bank above and from the water's edge below. The openings to these dark and gloomy caverns have a very picturesque effect, and a continued series of them present themselves one after the other. The galleries penetrate to a considerable distance. The extraction of the stone is done by contract or task work, at so much per cube, the quarrymen removing the blocks and dressing them, and another set of men contracting for their carriage from the part where they are quarried in the quarry to the quay at Caen.

Our friend, Mr. Smith, gave us some very useful remarks on the properties of two specticmens of Normandy stone a few evenings back. In addition to his experienced observations, I shall venture to offer the results of my own visits to the quarries.

Immediately under the soil there are some thin courses of hard coarse stone and rubble, but the immediate ceiling-bed is called the *banc cloutier*, and is about 2 feet 6 inches thick. It is of a hardish quality, but is not applicable for building purposes, as it contains a great quantity of pebbles, which offer great difficulties in the sawing and working. There are about six beds of good building stone, the five uppermost ones calculated for outside work, the lowermost adapted only for inside work, as it has soft portions, which do not well resist the atmosphere.* Much of this is used in the interior of the new Parliament buildings. The aggregate height of these six beds is from 22 to 25 feet. It is to be observed that all these beds are not to be found in every quarry, one or other of them disappearing and re-appearing in the same manner as in England. The names which I am about to give do not obtain in all parts of the district; and some of them have various designations given to them by the quarrymen. The uppermost bed is called the *banc pourri*, about 3 feet thick, which is a very good quality of stone; but occasionally it has in some portions the hard pebbles, previously alluded to, as prevailing to so great a degree in the *banc cloutier*, and therefore it is not so much esteemed for finer building purposes as the lower beds. The *gros banc* is the next bed, and has an average depth of 5 feet, but as it is inconvenient to work to that large size, it is generally split into two, in heights of 3 feet and 2 feet; and the smaller one is called the *banqueret* of the *gros banc*. *La pierre franche* bed comes next, about 3 feet deep, which is of a harder quality, and well adapted for cornices, sills, copings, and the like exposed positions in a building. Next to this is the *banc de quatre pieds*, a very fine bed, which has the same appellation, and depth of 4 feet, in all the quarries, as also the next bed, called *la pierre de trente pouces*, being 30 inches deep, a good hard bed of stone, and forming the lowest of those fit for

* This is also the case with all the colitic quarries in England. The uppermost beds are hardest to work, but most durable; the lower beds are soft, and will not stand the weather as well as the upper ones.

For info on PDF Compression and OCR go to ThePaperlessOffice.org